

1 7. The method as claimed in claim 1, which includes selecting either one freeze
2 frame per I-frame or two freeze frames per I-frame for a desired speed-up during trick
3 mode operation.

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5 8. The method as claimed in claim 1, wherein no more than about nine AC DCT
6 coefficients per 8x8 block are retained in the I-frames of reduced-quality MPEG coded
7 video.

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9 9. The method as claimed in claim 1, wherein the original-quality MPEG coded
10 video is included in an original-quality MPEG transport stream, and the method includes
11 producing an MPEG trick-mode transport stream including the reduced-quality MPEG
12 coded video and the freeze frames inserted into the reduced-quality MPEG coded video.

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14 10. The method as claimed in claim 9, which further includes extracting from the
15 original-quality MPEG transport stream an audio presentation unit for each I frame in the
16 reduced-quality MPEG coded video, the audio presentation unit having, in the original-
17 quality MPEG transport stream, an audio presentation time that first begins in a video
18 presentation time of a corresponding I frame in the original-quality MPEG transport
19 stream, and inserting the audio presentation unit into the reduced-quality MPEG transport
20 stream so that, in the reduced-quality MPEG transport stream, the audio presentation unit
21 has an audio presentation time that first begins in a video presentation time of said each I
22 frame.

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11. The method as claimed in claim 10, wherein an APU pointer specifies audio presentation units that are transferred from the original-quality MPEG transport stream to the reduced-quality MPEG transport stream, and the APU pointer is changed when a current APU ends by either incrementing the APU pointer or advancing the APU pointer to specify said audio presentation unit for said each I frame in the reduced-quality MPEG coded video.

12. A data storage device containing a main file, a fast-forward file and a fast-reverse file, the main file containing data of an MPEG transport stream including groups of pictures (GOPs), each GOP including an original-quality I-frame and a plurality of P or B-frames, the fast-forward file containing data of a fast-forward MPEG transport stream including GOPs, each GOP in the fast-forward file corresponding to a GOP in the main file and including at least one reduced-quality I frame corresponding to the original-quality I frame in the corresponding GOP of the main file, the fast-reverse file containing data of a fast-reverse MPEG transport stream including GOPs, each GOP in the fast-reverse file corresponding to a GOP in the main file and including at least one reduced-quality I-frame corresponding to the original-quality I frame in the corresponding GOP of the main file, wherein a reading of the main file produces an MPEG transport stream for an audio-visual presentation at a normal rate, a reading of the fast-forward file produces an MPEG transport stream of the audio-visual presentation in a forward direction at a fast rate, and a reading of the fast-reverse file produces an MPEG transport stream of the audio-visual presentation in a reverse direction at a fast rate.

